

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-3 (Cancelled)

4. (Currently amended) The method of Claim ~~[[3]]~~ 40 wherein the ~~[[dopant is a]]~~ p-type dopant is selected from the group consisting of Ga, Al, B and BF₂.
5. (Original) The method of Claim 4 wherein the p-type dopant is B, said B is implanted at an energy of from about 100 keV to about 500 keV and a dose of about 5E15 atoms/cm² to about 5E16 atom/cm².
6. (Original) The method of Claim 4 wherein the p-type dopant is BF₂, said BF₂ is implanted at an energy of from about 500 keV to about 2500 keV and a dose of about 5E15 atoms/cm² to about 5E16 atom/cm².
7. (Cancelled)
8. (Currently amended) The method of Claim ~~[[7]]~~ 40 wherein the annealing comprises a furnace anneal, a rapid thermal anneal, or a spike anneal.
9. (Original) The method of Claim 8 wherein the annealing is a furnace anneal step, said furnace anneal step is carried out at a temperature of about 600°C or greater for a time period of about 15 minutes or greater in the presence of an inert gas atmosphere, an oxidizing ambient or a mixture thereof.
10. (Original) The method of Claim 8 wherein the annealing is a rapid thermal anneal (RTA) step, said RTA step is carried out at a temperature of about 800°C or greater for a time period of

about 5 minutes or less in the presence of an inert gas atmosphere, an oxidizing ambient or a mixture thereof.

11. (Original) The method of Claim 8 wherein the annealing is a spike annealing step, said spike annealing step is performed at a temperature of about 900°C or greater for a time period of about 1 second or less in the presence of an inert gas atmosphere, an oxidizing ambient or a mixture thereof.

Claims 12-15 (Cancelled)

16. (Currently amended) The method of Claim [[1]] 40 further comprising forming a cap layer atop the Si-containing substrate after said electrolytic anodization process [[anodizing]], but prior to said oxidizing.

17. (Original) The method of Claim 16 wherein the cap layer comprises a Si-containing material.

18. (Currently amended) The method of Claim [[1]] 40 wherein the thermal oxidizing is performed in an oxygen-containing ambient.

19. (Original) The method of Claim 18 wherein the oxygen-containing ambient further comprises an inert gas.

20. (Original) The method of Claim 19 wherein the oxygen-containing ambient is selected from the group consisting of O₂, NO, N₂O, ozone, and air.

21. (Currently amended) The method of Claim [[1]] 40 wherein the thermal oxidizing is performed at a temperature of from about 1200 [[650]]°C to about 1325 [[1350]]°C.

22. (Currently amended) The method of Claim [[1]] 40 wherein the thermal oxidizing forms a surface oxide atop the Si-containing over-layer.

23. (Currently amended) The method of Claim ~~[[1]]~~ 40 wherein the buried oxide region is uniform.

24. (Currently amended) The method of Claim ~~[[1]]~~ 40 wherein the buried oxide region comprises discrete islands of thermal oxide.

Claims 25-26 (Cancelled)

27. (Currently amended) The method of Claim ~~[[1]]~~ 40 further comprising a pre-oxidization step prior to said thermal oxidizing, said pre-oxidization step includes oxidation in a wet oxygen ambient.

28. (Original) The method of Claim 27 wherein said pre-oxidization step is performed at a temperature from about 600°C to about 1200°C.

29. (Currently amended) The method of Claim ~~[[1]]~~ 40 further comprising a post oxidation step, said post oxidation step comprising a thermal anneal in a hydrogen ambient.

30. (Original) The method of Claim 29 wherein the post oxidization step is performed at a temperature from about 900°C to about 1200°C.

Claims 31-33 (Cancelled)

34. (Currently amended) The method of Claim ~~[[31]]~~ 40 wherein said ~~[[neutral]]~~ ion is Si and said second ion implanting ~~[[step]]~~ is performed using a Si dose from about 1E15 to about 1E16 atoms/cm² and an implant energy from about 200 to about 500 keV ~~[[at or below nominal room temperature]]~~.

Claims 35-38 (Cancelled)

39. (Currently amended) The method of Claim [[1]] 40 further comprising patterning the Si-containing substrate prior to the first ion implanting.

40. (New) A method of fabricating a silicon-on-insulator substrate comprising:

first ion implanting p-type or n-type dopants into a Si-containing substrate to a depth ranging from about 250 nm to about 1500 nm from a top surface of the Si-containing substrate;

second ion implanting at least one ion selected from the group consisting of Si, Ge, Ne, Bi, Sn and Xe, wherein the at least one ion may be implanted to below, above or within the depth at which the p-type or n-type dopants are present in the Si-containing substrate;

annealing the n-type or p-type dopants to provide an activated n-type or p-type dopant region in the Si-containing substrate;

performing an electrolytic anodization process comprising immersing the Si-containing substrate into an Hf-containing solution and applying a current density ranging from about 0.05

milliAmps/cm² to about 50 milliAmps/cm² to the Si-containing substrate to produce a porous Si region having a porosity of about 0.01% or greater at a depth greater than 50 nm from the upper surface of the Si-containing substrate, wherein the electrolytic anodization process converts the activated n-type or p-type dopant region into the porous Si region; and

thermal oxidizing at a temperature ranging from about 650°C to about 1350°C to convert the porous Si region to a buried oxide region, wherein a portion of the Si-containing substrate overlying the buried oxide region provides a Si-containing overlayer.